IAA International Conference on
Low-Cost Planetary Missions,
April 12-15, 1994,
Laurel, MD,

IAA-L- 10407

# PLUTO MISSION DEVELOPMENT STATUS

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## Abstract

Pluto is the last known planet not yet visited by a spacecraft. Two very small spacecraft are being designed to complete the initial reconnaissance of our Solar System. Science objectives for the mission include the characterization of Pluto's and Charon's global geology and morphology, surface compositional mapping, and the characterization of Pluto's neutral atmosphere. Additional objectives will be attempted if still within the project constraints, This paper briefly describes the mission, its instrumentation, subsystems and operations, and reports on the current progress to implement advanced technology in reducing spacecraft mass and power requirements. The priority of the primary design drivers are cost, schedule and performance. The goal of the mission is to deliver two 100 kg class spacecraft on separate launch vehicles on direct trajectories to the Pluto-Charon system taking under 10 years to arrive well before the collapse of Pluto's atmosphere and the impending polar shadow that will reduce the science return. End-to-end mission costs will be strictly capped.

Since completing preliminary design in 1992 with a spacecraft mass of 165 kg, contract and in-house work has been in progress to provide breadboard proof-of-concept hardware and software contributing toward a goal to reduce mass by at least 40 kg. Results will be reported for candidate scientific payload instruments, a composite structure, advanced antenna, significantly smaller electronics packaging, all-digital telecommunications subsystem, micro-miniaturized propulsion components, and other candidate areas for mass, power and size reduction within strict cost limits.